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ACSAS :

Microcomputer-based Subject Access

Lewis Cox

The Archives of Appalachia at East Tennessee State University (ETSU) ¹ recently attempted to improve subject access to its holdings through the development of a computer-based subject access system. The project and the subject access system have been given the acronym "ACSAS" (pronounced access), for "Archival Computerized Subject Access System." This article describes the subject access system and its development and concludes with an analysis of the system and the future role of such systems.

Today there is concerted effort in the archival community to utilize computer technology in order to improve and expand services. The long-term goal is to link all archives together in a nationwide computer network whereby materials can be quickly located at any repository in the country. This network, however, will require considerable work to put it into operation. Until this "ideal" network is in place and operating (and perhaps afterwards), there will be a need for intermediate, local applications of computer technology to improve archival operations. The purpose of the ACSAS project has been to develop a system of this type.

ACSAS provides a structured method of keeping track of the subjects available for research and of the particular holdings relevant to each subject. This is accomplished by entering and updating information in a data base file that can be used to produce a subject guide to the archives's holdings.

ACSAS is not a custom-written program, but is a systematic usage of an existing program.

The first attempts at computerization at the Archives of Appalachia began in 1980 with Dr. Richard Kesner, then director of the archives and the MARS project. MARS (Microcomputer Archival Retrieval System) was a National Endowment for the Humanities project that was originally intended to produce an archival management software package for microcomputers. Project staff concluded, however, that existing general purpose software (for example, spreadsheet, word processing, data base software) could be used effectively to perform the same functions. During this project the archives obtained its microcomputer equipment, including an Apple II Plus microcomputer, DB MASTER data base software, and Easy Writer word processing software. Further development of a computerized system was postponed when Dr. Kesner left the archives in 1981.

Dr. Ellen Garrison became director of the Archives of Appalachia in 1982, and she continued the process of improving access to the archives's holdings through the use of the computer. As part of this process, Norma Thomas, technical services archivist, began standardizing the subject headings used at the archives by converting them to Library of Congress (LC) format. ² Ms. Thomas's position was funded by the Center for Excellence in Appalachian Studies and Services as part of Tennessee's Centers for Excellence program, for the purpose, among other things, of assisting in the implementation of the subject access system.

Because the author had been working at the archives as a student assistant since 1979, and had worked with Dr. Garrison in various applications of the computer, he was requested to develop a computer-based subject access system for the archives. The project was performed as an independent study in computer science at ETSU under Dr. Evans Adams, beginning in the fall semester of 1984. The independent study was renewed and completed in the spring semester of 1985.

Development of the subject access system consisted of three main phases: research, design and development, and testing. Extensive research was conducted on data base systems in general and on specific subject access systems. From this research, it became apparent that the use of hierarchical relationships has gained widespread acceptance. For instance, in the ERIC (Educational Resources Information Center) Thesaurus (a computerized subject access system for educational publications), there is the use of Broader Term and Narrower Term relationships between terms that serve to refer the researcher to more general or more specific terms. Other indexing systems are similarly structured.

System design was the longest and most extensive phase of the project. The system was built around the DB MASTER 4 Plus data base management system on the Apple II Plus microcomputer. Involved in the system design was the design of the subject guide, the data base file, and the procedures for using the system. A user's manual, which explained the operation of the system, was developed, and file maintenance forms, which are used for data entry and editing, were produced. Design of the system was done in consultation with the archives staff in order to produce a more usable and effective system.

Testing of the system has been performed by the archives staff. Actual data was input, modifications were made to the data, and the subject guide was printed. Corrections and improvements were made to the system as necessary. The system now appears to perform satisfactorily. Unfortunately, the archives's need to standardize its index terms has delayed complete implementation of the system, and feedback from researchers is not yet available.

The subject access system was not used as an interactive system. It proved to be a more efficient use of the computer to print a subject guide containing all necessary information, rather than tying up the computer when it was needed for other purposes such as word processing or other data base uses. Using the system involves the following main

procedures:

1. Create categories (with corresponding numbers) by which to group subjects and enter these into the data base.
2. Gather information about the subjects used (subject heading, subject number, corresponding category number, media types referenced, "see" references, "see also" references) using file maintenance forms.
3. From these forms, enter into the data base the information related to each subject.
4. Produce the subject guide from the data base.
5. Add new subjects and modify existing subjects as needed, and reprint the subject guide.

There are four main sections to the subject guide: a category list, categorical summary lists, an alphabetical summary list, and a detailed list. The category list includes those index terms which are used to group related subjects together. Also included is a category number for each category. (See Figure 1.)

Related subjects are grouped by the categories to form the categorical summary lists. For each subject there is a corresponding "media indicator" code, which provides information on the types of media referenced by that subject. A "1" in the column for a particular media type indicates that the media type is referenced by the corresponding subject. The media types include AT (audio tape), BK (book), MS (manuscript), MP (map), PH (photograph), VF (vertical file), and VT (video tape). (See Figure 2.) In the alphabetical summary list, all subjects are listed in alphabetical order, along with corresponding media indicator codes and category numbers for each subject. The category number corresponds to the category of the categorical summary list to which the subject is assigned. (See Figure 3.)

The main section of the guide is the detailed list, which includes main entries and "see" references. The main entries consist of an index

term, "see also" references, and media descriptions. Media descriptions include a media type code and a corresponding media number and are used to describe the holdings relevant to the subject. For instance, a media description of "AT BM-101" indicates audio tape number BM-101. "See" references include an index term and "see" terms. (See Figure 4.)

The subject guide has been designed to be used as a categorical index. The advantage to this approach over a straight alphabetical index is that it is not necessary to know the exact term used for indexing, and therefore, it is less likely that relevant materials will be overlooked. Another advantage is that it brings together related subjects for those doing research over more general subject matter. As mentioned below, this also helps eliminate the problems of using the LC index terms.

The guide is used as a categorical guide by following these procedures:

1. Find the category that most nearly corresponds to the needed subject from the category list. (Figure 1.)
2. Look through the corresponding categorical summary list for a subject term that most nearly describes the subject needed. (Figure 2.)
3. In the detailed list, find the main entry for the subject term. Use the media descriptions to find the material that is relevant to the subject term. (Figure 4.)
4. Use the "see also" references to find other main entries that may lead to relevant material.

If only a certain type of media is desired for a subject, (for example, photographs of quilt-making), the media indicator code in the categorical summary list can be checked to see if photographs are referenced by the subject before going to the detailed list.

The guide is also used as an alphabetical index by following these procedures:

1. Look through the alphabetical summary list for the subject term desired. Use the media indicator code (Figure 3.)
2. If found, look for the main entry in the detailed list. Use the media descriptions and "see also" references in the same way as the categorical index. (Figure 4.)

Project staff produced a "System Manager's Manual" which explains how to use the data base for initial set-up, file maintenance (editing or adding information), and production of the subject guide. The manual also includes a complete data base description, a sample subject guide, sample file maintenance forms, a thorough index, and a glossary. The manual is designed for persons with little or no computer experience.

For creation and maintenance of the data base file, "file maintenance forms" are used. These are completed prior to modification of the data base information in order to prevent arbitrary modifications. These are also used for reference and as a "back-up" in case the data base file is damaged. (See Figure 5). Any modification of the data base is performed by following step-by-step "Procedures." These explain how to use the data base for adding, editing, or deleting information, for printing the sections of the subject guide, and for making backup copies of the data base files. (See Figure 6.)

The advantages to the computer-based ACSAS system over a manual system is the ability to easily produce various indexes (categorical, alphabetical, selective by category, selective by media type). Another benefit is the ability to quickly analyze an archives's holdings by type of subjects or media types. One other benefit is that this system somewhat forces a structured approach to subject access, rather than the arbitrary methods sometimes used by archives.

The decision to use the LC format for the index terms was based on the probability of the use of this format in a national archival computer network. The

LC format has proven difficult to work around in the conversion of the archives's index terms and would not have been used except for the necessity of standardization. The major problem with the LC terms is that there are few that neatly apply to the archives's holdings. This problem is avoided by allowing the archives to use its own index terms for the categories and by using the LC terms for the more specific subject headings.

Economics and the fact that the archives already owned the software were the major factors in the decision to use the DB MASTER 4 Plus data base program. DB MASTER did provide the necessary functions and performed reasonably well but, due in part to the limitations of the Apple II computer, proved difficult to work around since the design pushed it to its limits. A better but more expensive system would have consisted of an IBM PC compatible computer and Knowledgeman, DBASE III, or an equivalent programable data base program. With such a system, the use of custom-designed menus would have been possible. This would greatly simplify the operation of the subject access system for the user by listing the choices to perform certain functions of the ACSAS system (such as add a subject, print an alphabetical listing, etc.) rather than requiring the user to know what parts of the program to go through to perform a certain task. Also, help screens to explain operation of the system could have been made available. However, because DB MASTER provides a way to translate its files into a format that can be read by other programs (text format), it is possible for the data produced by it to be transferred to an upgraded system as the need arises.

As computer equipment and software prices fall, and as archivists become more familiar with computer technology, the computer will become a standard archival tool. It will enable archivists to provide a broader range of services and to improve the efficiency of the archival office. Eventually, it will enable archivists to share information and access to records with their colleagues and

researchers nationwide. And, this will certainly expand to include archivists around the world. ACSAS will, it is hoped, be a useful contribution to the archival community in its efforts to utilize microcomputer technology. It is not intended to be a final solution, but a starting point, a foundation that can be built upon.

CATEGORY LIST

<u>NUMBER</u>	<u>CATEGORY</u>
100	AGRICULTURE
120	ART/ARCHITECTURE/CRAFTS
140	BIBLIOGRAPHY
160	BUSINESS/INDUSTRY/LABOR
180	ECONOMIC DEVELOPMENT
200	EDUCATION
220	ETHNIC GROUPS
240	FAMILY/COMMUNITY LIFE
260	FOLK CULTURE/FOLKLORE
280	GENEALOGY/BIOGRAPHY
300	GEOGRAPHY/GEOGRAPHIC NAME
320	HEALTH SCIENCES
340	HISTORY
360	LITERATURE
380	LOCAL (COUNTY/CITY) HISTORY
400	MASS COMMUNICATIONS
420	MUSIC/PERFORMING ARTS
440	NATURAL RESOURCES/CONSERVATION
460	POLITICS AND GOVERNMENT
480	RECREATION/TOURISM/TRAVEL
500	RELIGION/CHURCH HISTORY
520	SCIENCE/TECHNOLOGY
540	SOCIAL ACTION
560	SOCIAL GROUPS
580	SOCIAL PROBLEMS
600	TRANSPORTATION

Figure 1.

CATEGORICAL SUMMARY LIST

CATEGORY NUMBER: 100

ABMMPVV-
TFSPHFT-

00000000 AGRICULTURAL EXHIBITIONS
00000100 AGRICULTURE
00000000 BUTCHERING HOGS
00000000 COTTON PRODUCTION

-----TOTALS FOR 100-----

Figure 2.

ALPHABETICAL SUMMARY LIST

ABMMPVV-	CAT.	
TKSPHFT-	NUM.	SUBJECT
-----	-----	-----
00000000	380	ABINGDON, VIRGINIA
00000000	380	ACUFF CEMETERY
00000000	160	AFL-CIO
00000100	220	AFRO-AMERICANS
00000100	560	AGED
00000000	100	AGRICULTURAL EXHIBITIONS
00000100	100	AGRICULTURE
00000000	300	ALABAMA
00000100	280	ALDERMAN, PAT
00000000	200	ALICE LLOYD COLLEGE
00000000	380	ALLEDALE ESTATES
00000100	200	AMERICAN ASSOCIATION OF UNIVERSITY WOMEN
00000100	160	AMERICAN COLLECTION SERVICE
00000000	160	AMERICAN FEDERATION OF HOSIERY WORKERS
00000100	260	AMERICAN FOLKLIFE CENTER
00000000	360	AMERICAN LITERATURE - TENNESSEE
00000000	340	AMERICAN REVOLUTION
00000000	200	AMERICAN TEMPERANCE UNIVERSITY
00000100	200	AMERICAN UNIVERSITY OF HARRIMAN
00000100	300	ANDERSON COUNTY, TENNESSEE
00000000	460	ANNEXATION - JOHNson CITY, TN.
00000000	240	APARTMENTS
00000100	180	APPALACHIAN ALABAMA DEVELOPMENT PLAN
00000100	540	APPALACHIAN ALLIANCE
00000100	360	APPALACHIAN BOOK AND RECORD SHOP
00000100	200	APPALACHIAN CENTER FOR EDUCATIONAL EQUITY
00000100	200	APPALACHIAN CONSORTIUM
00000000	180	APPALACHIAN DEVELOPMENT PROJECTS COMMITTEE
00000000	120	APPALACHIAN FIRESIDE CRAFTS
00000100	160	APPALACHIAN FLYING SERVICE
00000100	200	APPALACHIAN INSTITUTE
00000100	360	APPALACHIAN LITERARY LEAGUE

(Continued)

(Figure 3 continued)

00000000	200	APPALACHIAN ORAL HISTORY PROJECT
00000100	540	APPALACHIAN PEOPLE'S SERVICE ORGANIZATION
00000100	140	APPALACHIAN REGION, SOUTHERN - BIBLIOGRAPHY
00000100	280	APPALACHIAN REGION, SOUTHERN - BIOGRAPHY
00000100	480	APPALACHIAN REGION, SOUTHERN - DESCRIPTION AND TRAVEL
00000100	340	APPALACHIAN REGION, SOUTHERN - HISTORY
00000100	260	APPALACHIAN REGION, SOUTHERN - LANGUAGES
00000100	360	APPALACHIAN REGION, SOUTHERN - LITERATURES
00000100	300	APPALACHIAN REGION, SOUTHERN - MAPS
00000100	200	APPALACHIAN REGION, SOUTHERN - STUDY AND TEACHINGS
00000100	180	APPALACHIAN REGIONAL COMMISSION
00000100	320	APPALACHIAN REGIONAL COUNCIL FOR HEALTH ADVANCEMENT

Figure 3.

Abingdon, Virginia

See: Washington County, Virginia

Acuff Cemetery

See: Sullivan County, Tennessee

Afl-Cio

See: Collective Labor Agreements

Afro-Americans

Media Description: VF

Aged

See Also: Casey County, Kentucky

Media Description: VF

Agricultural Exhibitions

See: Washington County (TN) Agricultural & Mech

See: Washington County (TN) Fair Association

Agriculture

See Also: Appalshop Films

See Also: Tennessee Department of Agriculture

See Also: Tennessee, University of

Media Description: VF

Alabama

See: Appalachia Alabama Development Plan

Alderman, Pat

See Also: Appalachian Region, Southern - Maps

See Also: Cherokee Indians

See Also: Clinchfield Railroad

See Also: Franklin, State of

See Also: Overmountain Men

See Also: Tilson Family

Media Description: VF

Alice Lloyd College

See: Kentucky

Allendale Estates

See: Kingsport, TN - Buildings

American Association of University Women

Media Description: VF

American Collection Service

See: Washington County, Virginia

Media Description: VF

American Federation of Hosiery Workers

See: Magnet Mills, Inc.

American Folklife Center

(Continued)

(Figure 4, continued)

Media Description: VF

American Literature - Tennessee

See: Tennessee, University of Extension Series

American Revolution

See: Tennessee - History - Revolution - Register

American Temperance University

See: American University at Harriman

American University of Harriman

Media Description: VF

Anderson County, Tennessee

See Also: Oak Ridge Children's Museum

Media Description: VF

Figure 4.

FILE MAINTENANCE FORM #2

MAIN ENTRIES

Page...

Date:.....

Submitted by:.....

()Add ()Edit ()Delete

Category:.....

Category number:.....

Subject:

Subject number:

Media Indicator: A B M M P V V -

MARC Tag:

T K S P H F T -

- - - - -

.

---For Editing Only---

:ADD EDIT DELETE:

SEE ALSO references:

Ref.

No.

....
....
....
....
....
....

MEDIA DESCRIPTIONS:

Media Type Media Number

....
....
....
....
....
....

Figure 5.

Additions Procedure B - Major Terms

1. Use File Maintenance Form #2
2. Run DB MASTER (See the Initialization Procedure).
3. Invoke the SHORT FORM option from the MAIN MENU (choice 4). Answer "N" to "CREATE NEW FORM?".
4. Load the short form for MAJOR TERMS.
5. Invoke the ADD RECORDS option from the MAIN MENU (choice 2).
6. Insert the disk labeled "SUBJECT GUIDE, MASTER, V. 1, COPY 1" in DRIVE 1 when prompted.
7. If adding 1 subject, press <RETURN> when the additions prompt appears. If adding many subjects, press <ESC> and answer "Y" to "LAST RECORD DEFAULT MODE?".
8. Enter the appropriate information for the Major Term record: (See the DATA DESCRIPTION for information on the contents of these fields.)
 - a. CATEGORY NUMBER - use the number from step 1.
 - b. SUBJECT NUMBER - use the number assigned in step 1.
 - c. REFERENCE NUMBER - this is always "0" for Major Terms. Press <RETURN>.
 - d. CATEGORY/SUBJECT - enter the subject term from step 1.
 - e. MEDIA INDICATOR - use the number in step 1.
 - f. MARC TAG - use the number from step 1.
 - g. RECORD TYPE - enter "MT" (Major Term).
9. Press "<CTRL>-A" to add this record.
10. Repeat steps 8-9 for all Subject References.
11. Press "<CTRL>-C" and return to the MAIN MENU.
12. Close files and exit (choice 8).
13. If no more data entry/editing is to be done for the day, backup the files by using the BACKUP Procedure.

Figure 6.

Lewis Cox is currently assistant manager and computer services technician at Computer Applications, Ltd. in Johnson City, TN. This article was written as the result of an independent study conducted for the

computer science department at East Tennessee State University while the author was a student. The author wishes to thank Dr. Ellen Garrison, current director of the Archives of Appalachia; Norma Thomas, technical services archivist at the archives; Dr. Richard Kesner, former and first director of the archives; and Dr. Evans Adams, sponsor of the independent study, for their cooperation, guidance, and assistance in the successful completion of the ACSAS project.

NOTES

1 The Archives of Appalachia is located in Johnson City, Tennessee. The archives specializes in preserving and making available for research materials dealing with the Appalachian region that have significant historical and informational value.

2 In this article, subject term, subject heading, and index term are synonymous and include topics (subjects) and proper names of persons, organizations, or geographical areas.